

## REMARKS

Applicants respectfully request further examination and reconsideration in view of the instant response and amendments. Claims 1-40 remain pending in the case. Claims 1-40 are rejected.

Applicant thanks the Examiner for indicating the allowability of Claims 8 and 40 if rewritten in independent form, including all of the features of their respective base claims and any intervening claims.

Independent Claims 1, 23 and 32 have been amended. No new matter has been added. For example, support for the amendments to independent Claims 1, 23, and 32 can be found in the instant application serial no. 10/698,111, among other places, at page 14 lines 6-10, the last paragraph on page 13, page 13 line 27 to page 14 line 20, the last paragraph on page 11, lines 6-19 on page 14, and Figures 4 and 5.

## IMPROPER TO MAKE NEXT OFFICE ACTION FINAL

Applicant respectfully submits that it would be improper to make the next Office Action final because Applicant's amendment to Claims 1, 23 and 32 were not necessitated by the art asserted by the Office Action mailed February 5, 2010 and because the Office Action mailed February 5, 2010 was not complete to all matters.

MPEP 2144.04 (D) states, "If...a new ground of rejection is introduced by the examiner that is not necessitated by applicant's amendment of the claims, the rejection may not be made final. See MPEP 706.07(a)." Although independent Claims 1, 23 and 32 were amended they were only amended to better claim embodiments that Applicant is entitled to but they were not amended to get over the asserted art. For example, Applicant respectfully submitted in the previous response that Mahbub teaches away from the embodiments recited by the independent Claims 1, 23 and 32. Therefore, Applicant respectfully submits that although Applicants amended Claims 1, 23 and 32,

should the following arguments be found to be persuasive, Applicant respectfully submits that it would be improper to make the next Office Action final.

“The examiner’s action will be complete as to all matters, except that in appropriate circumstances, such as mis-joinder of invention, fundamental defects in the application, and the like, the action of the examiner may be limited to such matters before further action is made” (emphasis added; 37 CFR §1.104(b)). “In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command” (37 CFR §1.104(c)(2)). In particular, “[w]here a claim is refused for any reason relating to the merits thereof it should be “rejected” and the ground of rejection fully and clearly stated” (emphasis added; MPEP §707.07(d)). Applicants respectfully submit that the Office Action mailed February 5, 2010 did not respond to Applicant’s remarks. For example, the Office Action mailed February 5, 2010 did not respond to Applicant’s remarks concerning the differences between Mahbub and Claim 1, Applicant’s response to the arguments section and Applicant’s remarks concerning the lack of motivation to combine Mahbub because Mahbub teaches away from the embodiments recited by Claim 1. Therefore, it would be improper for the next Office Action to be made final. Further, Applicant respectfully requests that future Office Action fully respond to all of Applicant’s remarks.

Further, the Office Action dated February 5, 2010 was not complete to all matters because it relied on improper official notice as discussed below. Therefore, it would be improper for the next the next Office Action final because the Office Action dated February 5, 2010 relied on improper official notice.

#### IMPROPER OFFICIAL NOTICE

The foregoing notwithstanding, the instant Office Action states in paragraph 5 on page 14:

However, Mahbub, as modified by Beymer, fails to teach of fairly suggest that the classifier is a support vector machine and that the plan-view template is a vector basis obtained by principle component analysis (PCA).

First, Applicant respectfully points out that Claim 10 was rejected as being unpatentable over Mahbub in view of Beymer and further in view of Li. However, the Office Action did not cite any portion of Mahbub, Beymer or Li for “wherein said classifier is a support vector machine,” as recited by Claim 10. It appears that the Office Action is taking Official Notice with respect to “wherein said classifier is a support vector machine,” as recited by Claim 10.

Second, Applicant respectfully disagrees with the aforementioned assertion regarding the embodiment as recited in Claim 10. As such, Applicant respectfully requests that the Examiner produce authority for this assertion in conjunction with the embodiments as recited in Claim 10 for at least the following rationale.

Applicant respectfully submits that the Examiner has provided inadequate support of a finding of Official Notice. As stated in MPEP § 2144.03(A):

It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.

See id. (emphasis added), citing *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21. Indeed, “[i]t is never appropriate to rely solely on ‘common knowledge’ in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based.” See id., citing *Zurko*, 258 F.3d at 1385, 59 USPQ2d at 1697 (“[T]he Board cannot simply reach conclusions based on its own understanding or experience-or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.”)  
(emphasis added).

With respect to the embodiment as recited in Claim 10, Applicant respectfully submits that the basis for the Official Notice, as relied upon in the instant Office Action,

is not supported by sufficient evidence of record, as required. Accordingly, Applicant respectfully requests that the Examiner provide adequate evidence in support of the finding of Official Notice, in accordance with 37 C.F.R. § 104(c)(2) or (d)(2). The Office Action dated February 5, 2010 relied on improper official notice.

#### 35 U.S.C. 112, FIRST PARAGRAPH

The Office Action dated November 28<sup>th</sup>, 2008 rejected Claims 1-40 under 35 U.S.C. 112, first paragraph. Neither of the Office Actions dated June 4<sup>th</sup>, 2009 and February 5<sup>th</sup>, 2010 explicitly stated that this rejection under 35 U.S.C. 112, first paragraph was withdrawn. Applicant interprets the silence of the Office Actions dated June 4<sup>th</sup>, 2009 and February 5<sup>th</sup>, 2010 as an admission on the part of the USPTO that Claims 1-40 comply with the written description requirement under 35 U.S.C. 112, first paragraph.

#### PLAN VIEW

The Office Action stated in paragraph 2, “The Examiner has reopened prosecution in order to address one of the Applicant’s main arguments throughout the appeal brief wherein the Applicant alleges and repeatedly argues that the plan view image is two dimensional as is understood by ‘any one of ordinary skill in the art’...” Applicant respectfully submits that not only has Applicant argued that any one of ordinary skill in the art knows that a plan view image is two dimensional, the instant Application as filed also teaches a plan view image that is two dimensional. For example, referring to Figures 4 and 5 and the accompanying portions of the instant application describing Figures 4 and 5, the instant application as filed teaches a plan-view image coordinate system that is on the ground at the x-y plane. Further, the instant application as filed states at page 14 lines 7-10, “generating plan-view images 165 based on the three-dimensional coordinate and depth data 110, wherein plan-view images 165 are two-dimensional representations of three-dimensional point clouds 155.”

35 U.S.C. 103(a)

In paragraph 4, the Office Action rejected Claims 1, 3-7, 9, 12, 15, 19-23, 25, 26, 29-31, 32, 34-37 and 39 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0050924 by Mahbub et al. (referred to hereinafter as “Mahbub”) in view of “Person Counting Using Stereo” 2000 IEEE by Beymer (referred to herein as “Beymer”). Applicant has reviewed the asserted art and respectfully submits that the embodiments recited by the claims of the instant Application are neither taught nor suggested by Mahbub or Beymer, alone or in combination, for at least the following rational.

“As reiterated by the Supreme Court in *KSR*, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries” including “[a]scertaining the differences between the claimed invention and the prior art” (MPEP 2141(II)). “In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious” (emphasis in original; MPEP 2141.02(I)). Applicant notes that “[t]he prior art reference (or references when combined) need not teach or suggest all the claim limitations, however, Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art” (emphasis added; MPEP 2141(III)).

Applicant respectfully submits that “[i]t is improper to combine references where the references teach away from their combination” (emphasis added; MPEP 2145(X)(D)(2); *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). Applicant respectfully notes that “[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed

invention" (emphasis in original; MPEP 2141.02(VI); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). Further, Applicant respectfully submits that, “[w]ith regard to rejections under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not” (emphasis added) (MPEP 2142).

More specifically, Applicant understands Mahbub to teach away from the embodiment recited by independent Claim 1. Therefore, there is no motivation to combine Mahbub with any other asserted art.

#### MAHBUB

This section describes Applicant's understanding of what Mahbub teaches. Referring to the abstract, Mahbub teaches an occupant sensor incorporates a 3-D imaging system that acquires a 3-D image of an object. The application that Mahbub describes for his 3-D imaging system involves a safety restraint system that is controlled based on the presence, position and size of the occupant (last sentence of the abstract). Also referring to the abstract, the image is segmented to remove “unwanted portions” and to identify a region of interest (ROI). Two-dimensional projections are classified and a presence, size and position of an occupant can be identified. The contents thereof are classified based on 3-D features. Referring to 0059, examples of “unwanted portions” referred to in the abstract are the side door, the A-pillar, dashboard, floor and objects outside the window. In order to identify these “unwanted portions,” Mahbub takes into account front views (x-y), side views (z-y), and top views (z-x). For example, referring to lines 4-8 of 0088, Mahbub states, “...the projections of the volume on the XY, YZ, and ZX planes- respectively corresponding to the front, side, and top views of the ROI volume respectively shown in FIGS. 13, 12 and 14- are analyzed in 2-D” (emphasis added). As a part of determining the presence, position and size of an occupant it is important to be able to detect the seat and to determine whether the seat is empty. For example, referring to paragraph 0068, Mahbub states “For an empty seat,

the image comprises a seat cushion (bottom) and a seat back, which can be respectively characterized by two respective planes-a first plane characterizing the seat cushion and a second plan, at an angle relative to the first, characterizing the seat back. Figures 1b and 1c clearly depict that Mahbub uses views from more than one orientation in order to analyze a seat. Since Mahbub requires front views and side views in order to identify the presence, size, and position of an occupant, Applicant understands Mahbub to require view images that are not from above.

Further, Mahbub states at 0088 “Aside from the modeling shapes of the surfaces, mathematical features are also used for robust classification of features, wherein shape descriptors are applied to the 3-D segmented ROI for volumetric analysis. Further, the projections of the volume on the XY, YZ, and ZX planes—respectively corresponding to the front, side and top views of the ROI volume respectively shown in FIGS. 13, 12 and 14—are analyzed in 2-D. Most of the individual features cannot alone distinguish between scenarios, but may individually distinguish between certain properties of the scenarios. Accordingly, all the features are combined in a feature vector that is formed for an overall classification” (emphasis added). Therefore, Applicant understands Mahbub to teach “classifying” by applying shape descriptors and mathematical equations to a 3-D segmented ROI. Applicant respectfully submits that since Mahbub’s 3-D ROI is 3D. Mahbub’s 3-D ROI is not a plan-view. Second, Applicant respectfully points out that since Mahbub teaches in 0088 a reliance on XY, YZ, and ZX planes and states “Accordingly, all the features are combined in a feature vector that is formed for an overall classification,” (emphasis added) where Mahbub relies on all of XY, YZ and ZX planes to determine all of the features, Mahbub requires generating other view images in order to classify features and combine all of the features to form an overall classification.

#### NO MOTIVATION TO COMBINE

This section describes Applicant’s understanding of why there is no motivation to combine Mahbub with any other asserted art because Mahbub teaches away from the embodiment recited by independent Claim 1 for at least the reason that Applicant

understands Mahbub to require views that are not from above in order to determine the presence, position and size of the occupant (last sentence of the abstract).

For example, as discussed herein, Applicant understands Mahbub to require two different views, one of the seat and the other of the seat back. Since Mahbub requires two different views, one of the seat and the other of the seat back, Mahbub teaches away from “generating other view images based on different orientations of said object other than at said axis normal to ground level from above is not required,” as recited by independent Claim 1.

In another example, as described herein, Applicant respectfully points out that since Mahbub teaches in 0088 a reliance on XY, YZ, and ZX planes and states “Accordingly, all the features are combined in a feature vector that is formed for an overall classification,” (emphasis added) where Mahbub relies on all of XY, YZ and ZX planes to determine all of the features, Mahbub requires generating other view images in order to classify features and combine all of the features to form an overall classification. Since Mahbub requires generating other view images, Mahbub teaches away from “generating other view images based on different orientations of said object other than at said axis normal to ground level from above is not required,” as recited by independent Claim 1.

#### OFFICE ACTION'S ASSERTIONS

This section describes Applicant's understanding of why the portions of Mahbub cited in the Office Action do not teach or suggest the embodiment recited by Claim 1.

The Office Action states at the last 4 lines on page 4, “Mahbub is suggesting different location alternatives from where the 3-D image data may be produced and therefore the Examiner is considering Mahbub's plan-view image to be the segmented 3D image from the headliner location [the headliner has a fixed overhead location and a fixed overhead orientation] because the headliner above the rear view mirror which is

above the seating area provides the maximum field of view with minimal obstruction.” Applicant does not understand either Mahbub’s 3D image nor Mahbub’s segments of Mahbub’s 3D image to be plan-view images. Mahbub’s 3D image does not teach a plan-view image because as any one of ordinary skill in the art understands, a plan-view is 2D not 3D. Applicant respectfully submits that Mahbub’s segmented 3D image also does not teach a plan-view image because the segments of the 3D image are also 3D. For example, Mahbub describes “segmentation” of a 3D image at 0059-0066. In the first sentence of 0059, Mahbub states, “As used herein, the term segmentation means the extraction from the image of a region of interest (ROI) that contains useful information. ...the side door, A-pillar, dashed board, floor and objects outside the window are all examples of background clutter that can be and preferably are eliminated from the image by segmentation, leaving as a remainder the ROI.” Mahbub uses equations 10, 11, 12, 13 and 14 depicted in paragraphs 0059-0066 to calculate the segments and remove the segments for the A-pillar, dashed board, floor and objects outside the window. Applicant does not understand Mahbub’s segments—A-pillar, dashed board, floor and objects—to teach “a plan-view image” for at least the reason that the equations used for calculating the segments involve x, y and z coordinates. Since the equations for calculating the segments involve x, y and z coordinates, the segments are also 3D.

Further, Applicant respectfully submits that the Office Action’s statement at last 4 lines on page 4 confuses the location of a 3D imaging system and “generating” views. For example, referring to 0057 lines 11-14 and 0057 lines 10-12, Mahbub’s 3-D imaging system collects 3-D image data (also referred to as “taking 3-D images”). Mahbub generates views of various objects, such as a person in the car, the back of the seat and the bottom of the seat. Mahbub then uses these generated views to identify the presence, size, and position of an occupant. Referring to paragraph 0068, Mahbub requires at least two different views, one of the seat and the other of the seat back, as a part of identifying the presence, size, and position of an occupant. Since Mahbub requires two different views, one of the seat and the other of the seat back, Mahbub teaches away from “wherein generating other view images based on different

orientations of said object other than at said axis normal to ground level from above is not required," as recited by independent Claim 1.

As described herein, Applicant respectfully points out that since Mahbub teaches in 0088 a reliance on XY, YZ, and ZX planes and states "Accordingly, all the features are combined in a feature vector that is formed for an overall classification," (emphasis added) where Mahbub relies on all of XY, YZ and ZX planes to determine all of the features, Mahbub requires generating other view images in order to classify features and combine all of the features to form an overall classification. Since Mahbub requires generating other view images, Mahbub teaches away from "generating other view images based on different orientations of said object other than at said axis normal to ground level from above is not required," as recited by independent Claim 1.

At last 4 lines on page 4, the Office Action states, "Further, Mahbub's plan-view template [2D XY, YZ, or ZX plane images] which are used for classifying in the other hand are the different projection perspective views of the 3D {ROI} segmented image as discussed in paragraph [0088]. Applicant respectfully submits that if Mahbub's 2D XY, YZ and ZX plane images teach Claim 1's "said plan-view template," then Mahbub should teach assigning a class to Mahbub's XY, YZ, or ZX plane view instead of using his XY, YZ and ZX plane images for classifying. Therefore, Mahbub's different projection perspective views do not teach Claim 1's "said plan-view template."

## SUMMARY

Applicant respectfully submits that Mahbub to teach away from "generating other view images based on different orientations of said object other than at said axis normal to ground level from above is not required," as recited by Claim 1. Since Mahbub teaches away from "generating other view images based on different orientations of said object other than at said axis normal to ground level from above is not required," there is no motivation to combine Mahbub with any other asserted art. Therefore, Applicant respectfully submits that Claim 1 should be patentable for at least the reason that Applicant understands Mahbub to teach away from "generating other view images

based on different orientations of said object other than at said axis normal to ground level from above is not required,” as recited by Claim 1.

For similar reasons, independent Claims 23 and 32 should also be patentable since Claim 23 also recites “wherein said generating of said plan-view image includes generating said plan-view image as if said object was viewed at an axis normal to ground level from above and wherein generating other view images based on different orientations of said object other than at said axis normal to ground level from above is not required” and Claim 32 recites “...generating said plan-view image as if said object was viewed at an axis normal to ground level from above... said classifier does not require other view images based on different orientations than at said axis normal to ground level from above of said object in order to make said decision.”

Claims 2-22 depend on independent Claim 1. Claims 24-31 depend on independent Claim 23. Claims 33-40 depend on independent Claim 32. These dependent Claims include all of the features of their respective independent claims. Therefore, these dependent claims should be patentable for at least the reasons that their respective independent claims should be patentable.

35 U.S.C. 103

Claims 10, 16, 17 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Mahbub in view of Beymer and further in view of U.S. Patent Application Publication No. 2003/0108244 by Li et al. (referred to herein as “Li”). Applicant has reviewed the asserted art and respectfully submits that the embodiments recited by the Claims of the instant Application are neither taught nor suggested by Mahbub, Beymer or Li, alone or in combination, for at least the reasons already provided herein that there is no motivation to combine Mahbub with any other asserted art because Mahbub teaches away from the embodiments recited by the Claims of the instant Application.

35 U.S.C. 103

Claims 2, 11, 13, 14, 18, 24, 28 and 33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Mahbub in view of Beymer and further in view of U.S. Patent Application Publication 2004/0017929 by Bramblet et al. (referred to herein as “Bramblet”). Applicant has reviewed the asserted art and respectfully submits that the embodiments recited by the Claims of the instant Application are neither taught nor suggested by Mahbub, Beymer or Bramblet, alone or in combination, for at least the reasons already provided herein that there is no motivation to combine Mahbub with any other asserted art because Mahbub teaches away from the embodiments recited by the Claims of the instant Application.

### CONCLUSION

Based on the arguments presented above, Applicant respectfully asserts that Claims 1-40 overcome the rejections of record and, therefore, Applicants respectfully solicit allowance of these Claims.

The Examiner is invited to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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